

Measure: Increased Commercial Recycling (G4, G4a, G4b)

Build on the successes of the ARRA-funded voluntary commercial recycling initiative by aggressively promoting recycling to all City commercial waste disposal accounts (focused on cost savings) with a goal of recycling 25% of the materials presently sent to landfills by commercial accounts by 2020.

The City's Environmental Services Division has already experienced a 20% success rate in new, voluntary commercial recycling accounts following the initial ARRA outreach effort. Higher participation rates are expected as the program grows through 2012.¹

Yet there is an even larger universe of commercial waste accounts that could be tapped for their recycling potential.

Emission reduction potential:	14,448 tCO ₂ e
Percentage of goal (2012):	.08%
Percentage of goal (2020):	.64%
Total annual average implementation costs:	
Entity that bears the costs of implementation:	City of Tucson
Cost/Savings per tCO ₂ e:	
Net annual savings:	
Entity that realizes the financial return:	Commercial recyclers, City of Tucson
Equitability (progressive/regressive, income/revenue neutral, etc):	Equity-neutral as the program would be voluntary
Potential unintended consequences:	Uncertainties due to consistency of voluntary behaviors

Background information:

According to U.S. Environmental Protection Agency (EPA) estimates, 48 million tons of carbon emissions were avoided through recycling practices in 2005. This is equivalent to the emissions produced by 36 million cars per year.

Using recycled materials in place of virgin materials is the primary source of reduced carbon emissions with differing impacts depending on the material and on its comparative effect if landfilled.

Another way that recycling reduces GHGs from waste is the diversion of organic materials that will decompose from landfills, where the decomposition under pressure results in methane releases (methane is 21-23 times more potent as a GHG than CO₂). For this reason, the EPA aims to get all major landfills in the US fitted with systems that capture the methane emissions and burn the methane for productive use which transforms it into CO₂. A methane recovery system was installed at the City's landfill, Los Reales, in 1999 that pipes the methane to TEP for energy production (estimated to be enough for 4,000 homes).²

Single-stream recycling, as practiced in Tucson, increases the tonnage of recyclables collected in a community by 50%,³ a benefit Tucson has already experienced. Extending this opportunity to the commercial sector will gain greater volumes for the City's program, avoid more carbon emissions, and result in new savings to the commercial participants.

Status Quo / Business as Usual:

As indicated below, waste and recycling tonnage data show a considerable additional opportunity for capture of recyclable materials from commercial waste hauling accounts held by the City of Tucson.

Absent the type of aggressive outreach campaign proposed, progress towards enhanced commercial recycling would be much slower, opportunities for greenhouse gas reductions delayed, and cost-savings for Tucson businesses lost.

Description of Measure and Implementation Scenario:

The City's ARRA-funded voluntary commercial recycling initiative shows early promise. Of the initial 54 commercial accounts contacted and audited, 10 have converted to recycling. More of these 54 are expected to join as corporate approvals to participate are forthcoming.

This measure calls for the City to compile the first-year successes of the ARRA program, highlighting cost savings and emissions reductions, and extend the outreach to a larger segment of its commercial customer base.

The stretch-goal is to bring into the City's commercial recycling base additional businesses that would not have participated without access to cost-savings information generated and available through the City's ARRA program efforts.

The stretch goal for this measure is to capture 50% of the commercially generated waste that is able to be recycled. This can be accomplished with an aggressive outreach campaign by City Environmental Services Division staff using actual commercial savings generated by and reported through the current ARRA commercial recycling initiative.

Has the Measure been implemented elsewhere and with what results?

Commercial recycling programs have been in place nationwide for decades, achieving multiple benefits in the areas of meeting recycling goals, extending landfill life, reducing emissions from extraction of virgin materials, stimulating local businesses involved in recycled-content product manufacture, creation of local jobs, expanding the local tax base, etc

Energy/Emission analysis:

A recent study has determined that there is a 0.61 tCO₂e reduction for every outbound ton of material outbound from a materials recovery (recycling) facility.⁴ The City's commercial recycling initiative estimated greenhouse gas reductions on the order of 3 million tCO₂e once 450 commercial waste generators were contacted and audited and a significant number of them begin recycling.

The City of Tucson currently has 3,338 commercial waste accounts without recycling and 661 commercial waste recycling accounts (presumably also having non-recyclable waste collected by the City. Thus there is a total of 4,999 commercial waste hauling accounts served by the City, 661 of them (13%) also participating in the City's recycling program.

Commercial recycling tonnage in November 2010 accounted for 10% of the City's total recovered tonnage.⁵ The City's total commercial waste in a year recently amounted to 95,000 tons. The 661 commercial recycling accounts were responsible for the diversion of 4,000 tons of recyclable material from the City landfill. Using the Resource Recycling emissions/ton multiplier above, the 4,000 tons being recycled have lowered City emissions by 2,440 tCO₂e/yr.

This analysis assumes that only half of the commercial waste (95,000 tons) now being landfilled annually can be recycled, or 47,500 tons. This measure proposes aggressive

outreach to the 3,338 non-recycling commercial accounts that results by 2020 in half of that potentially recyclable commercial waste (23,750 tons) to be diverted to the City's recycling program.

We assume that this occurs incrementally over the decade as the outreach and promotion campaign reaches more and more potential commercial recyclers. For the purposes of this analysis, we assume that 11% of the 23,750 tons (2,639 tons) recycling goal is achieved each year beginning in 2012.

Greenhouse gas savings per ton of recycled material is reported at 0.61 tCO₂e.

The 23,750 ton goal, if achieved, results in projected greenhouse gas savings in 2020 of 14,448 tCO₂e. Savings at the end of 2012 would be 1,608 tons tCO₂e.

COT 1990 Citywide GHG emissions (baseline):	5,461,020 tCO ₂ e
MCPA 7% reduction target for COT:	5,078,749
2012 BAU GHG emissions projection:	7,000,000
2020 BAU GHG emissions projection:	7,343,141
GHG emissions reduction to meet 7% goal (2012):	1,921,251
GHG emissions reduction to meet 7% goal (2020):	2,264,392
Contribution of this Measure (2011 – 2020):	14,448

Economic analysis:

There is almost no additional cost to the City to add commercial customers to its recycling program. Waste pick-up trucks must run in any event to pick up refuse from commercial accounts, and recycling trucks already run routes that could easily take them to new commercial recycling pick-ups. These already-incurred truck expenses represent about 75% of the cost of the City's overall waste and recycling collection programs.⁶ We therefore assume that the City's costs of serving new commercial recycling accounts do not exceed the benefits, even though the City's revenues from collecting the materials declines.

This positive cost/benefit scenario is facilitated by the City accruing revenues from the sale of collected recyclable materials. The sale price is determined by global markets out of the City's control which have seen wild swings in the past two years and are very difficult to predict. We have left potential City revenues from increased recycled materials to sell out of the economic analysis, calculating only the savings to commercial businesses from greater recycling.

Commercial recyclers are not required by the City, who they are contracted to for hauling services, to report customer savings from recycling charges that are less expensive than waste hauling charges by about 46%.⁷ Volumes differ by commercial

account and from month-to-month, making precise calculations of dollars saved difficult to obtain. We have assumed that a commercial account will save

The City's net revenue from all recycling tonnages collected and sold was \$154,576 for the same month. Based on this number we calculate a total net revenue for the year of \$1.85 million. Commercial recyclable values, at 10% of this number, bring the City an estimated \$185,000/year.

The City reports, as noted above, that its costs to collect recycled materials are not covered by the revenue collected from the sale of recycled material. So we assume that there will be some additional cost to the City to collect recyclables from new commercial accounts.

The City has had a long-standing commitment to increased recycling at all levels. This indicates that whatever the incremental cost of adding new commercial recycling accounts it would not be a barrier to implementation of this measure.

Co-benefits:

See "Has the Measure Been Implemented Elsewhere" (above).

Equitability:

There are no apparent equitability issues raised by additional businesses voluntarily agreeing to sign up for commercial recycling accounts.

Potential unintended consequences:

None identified.

Endnotes

¹ Communication with Fran LaSala, City of Tucson, January 2011.

² Arizona Department of Environmental Quality, "Los Reales Landfill," at: <http://www.azdeq.gov/environ/waste/sps/download/tucson/losreales.pdf>.

³ Resource Recycling. December 2010.

⁴ Resource Recycling. Op.cit.

⁵ Recycle America Alliance – Tucson MRF, City of Tucson Contracted Revenue Share for the Month Ending 11/30/2010.

⁶ LaSala. Op.cit.

⁷ Based on averaging the difference between City of Tucson commercial recycling rates for a given volume of materials and refuse rates, using the rate schedule for “Front Load Collection Service Monthly Fees,” at:
http://cms3.tucsonaz.gov/sites/default/files/esd/Commercial%20Refuse_Rate%20Schedule%281%29.pdf.